

16 Mobile learning: a powerful tool for ubiquitous language learning

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Abstract

Mobile devices (smartphones, tablets, e-readers, etc.) have come to be used as tools for mobile learning. Several studies support the integration of such technological devices with learning, particularly with language learning. In this paper, we wish to present an Android app designed for the teaching and learning of Portuguese as a foreign language. We aim to promote new experiences in the field of mobile learning, based on the concept of Social Learning (Mondahl & Razmerita, 2014).

Keywords: mobile devices, languages, social learning, learning management system.

1. Mobile devices in the language classroom

Research on language learning using mobile devices such as mobile phones or Personal Digital Assistants (PDAs) has increased exponentially in the last decade. Most of this research showed that students have positive perceptions about the use of their own mobile phone as a learning tool. Connected seamlessly to the Internet via wireless access, these mobile technologies open up a range of possibilities for teaching and learning languages (both native and foreign). Mobile phones or smartphones are being used to enable the development not only of lexical skills (Lu, 2008; Moura & Carvalho, 2013) and grammar (Wang

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& Smith, 2013), but also of speaking and listening skills (Lys, 2013) in formal and informal contexts. Students have only tapped into the educational potential of mobile phones, and it appears that the technology is not a barrier for them. In fact, learners nowadays are carrying new literacies and digital technology (Web 2.0 environments, iPods, mobile communication, etc.) into schools. Mobile phones now have GPS, texting, voice, and multimedia capabilities which can be used to improve language learning performance (Bloch, 2008; DuBravac, 2012; Moura, 2010; Moura & Carvalho, 2011; Sykes & Reinhardt, 2013, among others).

The possibilities that Web 2.0 and mobile technologies offer the language teacher are countless, with new applications and services being launched every day. Applications such as *Duolingo*, *Babbel*, *Mosalingua*, *Memrise*, *Voxy* and *Busuu* are available for download from the App Store or Google Play. These apps provide a stress-free work environment for learners and help them to be more responsible for their learning process. As for informal language learning through social interactions, there are several websites that use social networks like *Babbel* (www.babbel.com), *LiveMocha* (www.livemocha.com) or *Palabea* (www.palabea.net). These e-learning platforms allow students to hone practical skills and conversational fluency via videoconference. *Verbling* for example offers immersive language learning through Google+ Hangouts. *Italki* or *Mixer* connect people online to practice speaking skills together via Skype. As mentioned by Eaton (2013), *Duolingo* has come up with an innovative “way to combine social media-based language learning with crowd-sourced efforts [in order] to translate the Web” (n.p.). All these platforms offer increasingly powerful applications (like multimedia and social networking) which make language learning practice resemble real-life communication. It is generally believed that language learning can be most effective when language practice occurs in real and meaningful conversations (with other learners who share the same interests) instead of isolated linguistic settings. Some of the relevant concepts found in the literature on mobile learning (‘social interactionism’, ‘social constructivism’ or ‘connectivism’) call our attention to the role of social interaction in language learning (Lisbôa, Coutinho, & Bottentuit Júnior, 2013; Verga & Kotz, 2013).

Although there is a greater proliferation of applications for the English language, we can find several apps which combine online instructional content with a global community of language learners in a very wide range of languages. *Livemocha*, for example, offers languages learning programs in over 35 languages. Without leaving home, students can learn foreign languages like English, French or more exotic languages. Portuguese, however, is very poorly represented and whatever few courses exist are often taught in Brazilian Portuguese. Spoken by 244 million people worldwide, Portuguese is the sixth most spoken language in the world, the fifth most used on the Internet and third on the social networks Facebook and Twitter, according to Portuguese newspaper *Público*.

2. Presentation of the prototype *I want to learn Portuguese*

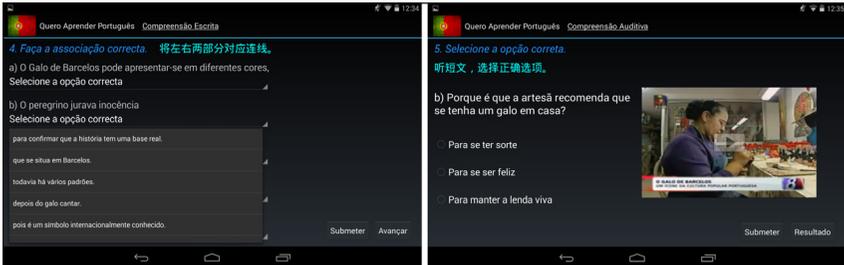
Within the course of *Technologies Applied to Language* offered in 2012-2013, eight students of the Master's in *Non-Native Portuguese Language - Portuguese as a Foreign Language and Second Language* at the University of Minho have created contents for the national symbol of Portugal – *Galo de Barcelos*. From these contents, we have developed an Android app for Portuguese language learners, which is illustrated in [Figure 1](#).

Figure 1. Interface of application with Galo de Barcelos



We tried to develop different language skills (vocabulary, grammar, listening and reading skills, etc.) through a wide variety of activities (true/false, filling in the blanks, matching, multiple choice, etc.) and using authentic audio-visual materials (Figure 2).

Figure 2. Listening and vocabulary activities



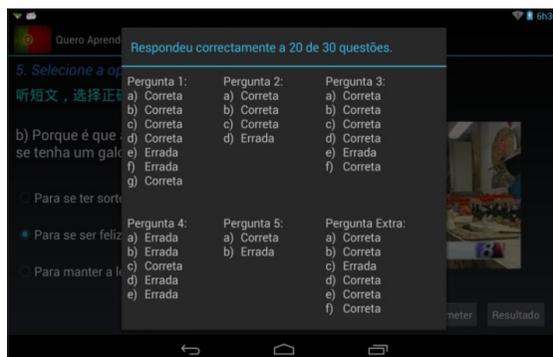
A bilingual dictionary was inserted to help Chinese students grasp the meaning of words considered difficult (Figure 3).

Figure 3. Chinese-Portuguese dictionary



Students receive specific feedback on their performance with respect to each activity or at the end of each lesson (Figure 4).

Figure 4. Visualisation of final results



This feedback is useful for learners because it is a tool for active, self-directed involvement, which is essential for developing communicative competence.

3. Extension of this prototype

The application described in the previous section was merely a first prototype that we want to develop in partnership with the Department of Industrial Electronics Engineering of the University of Minho. Our intention is to create a flexible teaching and learning environment in which teachers and students can navigate as they wish, (passively) querying content or (actively) creating and sharing content.

3.1. Technological aspects

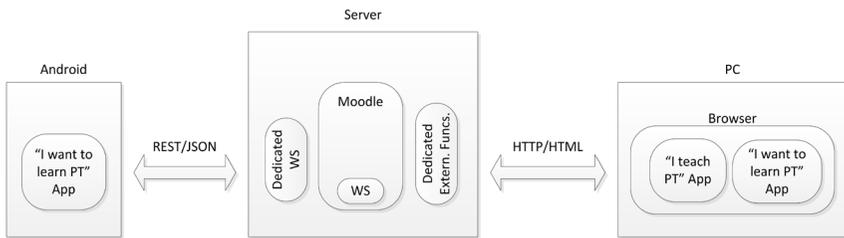
The system under development should be able to take full advantage of mobile platforms, namely by offering enhanced speed and battery usage. Consequently, it is built around a native Android application, but it also features a web interface which can be accessed from any platform (mobile or desktop).

Another goal of the system is to easily support delivery of new learning materials. Since mobile platforms are not appropriate for content production, it will feature

a web application to help teachers to produce new activities. When contents are introduced in this web application, they will be immediately available to all mobile application users connected to the Internet. Drawing on HTML5 new features such as drag and drop, this web application will be plugin-free and usable virtually in any platform.

To summarise, the system is composed of (1) an Android application for learners, (2) an alternative web application for learners, offering the same features as the previous one, and (3) a web application for teachers and institutions supporting course management and creation of materials. The system architecture is illustrated in [Figure 5](#).

Figure 5. System architecture



The server side of this system is therefore central because it stores the contents that are made available to learners in both the web and Android client applications. To implement the system we (naturally) considered existing Learning Management Systems (LMS). Moodle is a widely used and free LMS, along with all related development tools, and it features a modular design that can be extended by plugins. It was thus chosen as the basis for the server implementation.

Moodle is a complete LMS that features customisation of web site design, collaboration tools that make it easier to build communities, configurable grading and reports, and it supports different learning methods. The most important feature of Moodle for the purpose of this project is that it provides a web service access using different protocols and formats. Therefore, Moodle’s web services are the interface for the Android application, namely REST web

services and JSON data to reduce both processing load and network bandwidth (Mohamed & Wijesekera, 2012).

Moodle will be extended to support the Android app in a more efficient way, as well as the concepts of the pedagogical approach proposed in the following section. More specifically, it will be extended with a web service for the Android app and a back-office supporting additional kinds of activities (or quizzes) and functionalities, for example, games. These extensions are implemented as dedicated external functions. New kinds of quizzes consist of templates for both web and Android interfaces, and a database schema. The web interface will make use of some of the newest HTML features like animations.

Although the project includes a web application with similar goals to the Android App, in this paper we focus on the latter. Since internet connectivity is not always available, the app will store offline content using a local database that is later synchronised with the Moodle database. Users will be able to choose different levels of offline content download (and a cache size limit), for example, the current learning path or the entire course. Offline content has to be managed, which will be done automatically. When activities are finished, the results are saved in the local database and any other data can be deleted. Users will have the option to delete no longer needed data, or it will be automatically deleted when cache exceeds size limit. When the mobile device gets connected to the Internet again, the application automatically sends any results data to the server. This data is short and it is kept as part of the user profile and has to be deleted explicitly in the mobile application.

Pronunciation activities will be supported by the system but with manual assessment. Both teachers and material designers often forget that intonation is an important aspect of phonetics which carries meaning. The segmental (i.e. vowels and consonants) and suprasegmental (i.e. rhythm and intonation) features of speech clearly cannot be neglected in foreign language learning and teaching. The online language learning platform *Babbel* tries to give learners an ‘instant evaluation’ of how close their pronunciation is to that of a native speaker, but this speech recognition tool sometimes does not work. This can

be frustrating, especially when it prevents progressing in the learning process. In fact, assessing the proficiency of non-native speakers poses a big challenge for researchers dealing with speech recognition technologies for pronunciation learning, particularly pronunciation evaluation and error detection (AbuSeileek, 2007). For these reasons, the introduction of ‘real-time’ speech recognition to aid users to improve their pronunciation skills was left for future developments. However, the platform saves the speech produced by learners for later assessment by teachers (Bottentuit & Coutinho, 2008).

3.2. Pedagogical aspects

The app will provide users with a guided path that allows for the contextualised development of different skills (lexical, grammatical, written and spoken comprehension) based on self-correction activities structured according to their level of difficulty.

The web platform will also feature a functional and intuitive application to create and view a wide range of contents with different templates. These templates will be customised according to input from teachers, who may additionally suggest new types of activities to encourage novel ways of perception and learning stimuli. The proposed tools are simple to use, intuitive and friendly, providing a pleasant experience to the user. From a technological and social perspective, these tools will enhance new ways of creating, publishing and managing educational content in virtual contexts. It should be noted that we will support the insertion of games namely for training of grammar or vocabulary (Cornillie, Thorne, & Desmet, 2012). These types of games are not only motivational, but they also support incidental and informal learning (Marsick & Watkins, 2001).

These content creation applications may be used by any teacher who wants to create learning objects for their class(es), and teachers/schools interested in developing (more complete) language learning paths for one or more levels of the Common European Framework of Reference for Languages (CEFR, 2001). Both teachers and learners will have access to all produced content via

their phones, tablets and via their computers whenever and wherever, using the two learning applications.

The ‘private’ digital resource created by teachers as part of their professional practice can be made public at any time if they so wish. Likewise, educational institutions registered on the platform will have their learning objects/paths made freely available. Thus, the platform will also help teachers/institutions to promote and internationalise their courses with rankings (which will be accomplished through specific feedback on the students’ learning results; teachers’ feedback, external expert committee, among others).

4. Conclusion

To think about strategies for language learning through mobile devices is becoming more effective and easy given the popularity of these devices among students. Whereas there are teachers who accept challenges and are willing to incorporate this type of technology in the classroom, others are more reluctant and resist changes in their educational practices (Lancha, 2010). To improve mobile learning effectiveness, teachers need to be adequately prepared to implement technology in their teaching and learning practice.

When we propose a learning environment supported by emerging digital technologies, we intend to reinforce the adoption of these technologies in order to form a wide community of teachers who share experiences and digital material. In fact, while updating their knowledge, users of this platform will certainly rethink pedagogies and focus on teaching methods that extend the classroom beyond the traditional learning environments (Wang & Smith, 2013). Our aim is to foster the standardisation across the online teaching network, encouraging teachers to actively work together to enrich the quality of the pedagogical strategies and contents presently available for teaching. It is really important that the teacher may, without advanced technical knowledge, design and publish visually attractive materials that are appropriate to the profile and age of the students. More than offering intuitive and friendly tools for design

and publication of digital contents, the major advantage of this project is that all materials and developers will be evaluated with several criteria in order to encourage teamwork and creativity among the teaching community. This step is crucial to provide an optimal learning process for students and to help them find the adequate course according to their needs.

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